UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Christopher Boelke
Assistant Regional Administrator for Protected Resources
U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Marine Fisheries Service
Greater Atlantic Regional Fisheries Office
55 Great Republic Drive
Gloucester, MA 01930-2276

Re: Request for Concurrence with Proposed Revised Biological Evaluation
Draft NPDES Permit No. DC0000345 and DC0000370
World War II Memorial and Lincoln Memorial
National Park Service

Dear Mr. Christopher Boelke,

We are preparing to reissue a National Pollutant Discharge Elimination System (NPDES) Permit for the proposed project as described below. This letter is to request Endangered Species Act (ESA) concurrence from your office for the renewal of the World War II (WWII) Memorial NPDES Permit no. DC0000345 and the new Lincoln Memorial Permit No. DC0000370. We have made the determination that the proposed activities under both these permits may affect, but is not likely to adversely affect, any species listed as threatened or endangered by NMFS under the ESA of 1973, as amended. Our supporting analysis is provided below.

I. Proposed Projects

World War II Memorial

The United States Environmental Protection Agency (EPA), Region III, is preparing to reissue a National Pollutant Discharge Elimination System (NPDES) Permit for the WWII Memorial to continue coverage of a comingled effluent discharge of uncontaminated groundwater, fountain water, and storm water. The discharge is to the Tidal Basin impoundment which is located between the Middle Potomac River and the Washington Ship Channel. The discharge is intermittent and average flow is 0.05 million gallons per day (MGD).

EPA is planning to offer the draft permit for a thirty (30) day public review and comment period which will begin in February 2018. Upon conclusion of the public review and comment period, EPA will begin to make a determination regarding the issuance of the final NPDES permit.

The NPDES permit for the WWII Memorial will have a five (5) year term limit with two special conditions for monitoring. Special Condition no. 1 includes a two-year compliance schedule for E. coli. Special Condition no. 2 includes additional monitoring and reporting requirements for iron.

The fountain water is potable water and may be drained once per year for cleaning, maintenance and winterizing. The discharge is composed of a mixture of stormwater, uncontaminated groundwater, and intermittent discharges of filter backwash and pool flushings. A pump station with a wet well located in the south vault will collect and convey the combined discharge to the receiving waters of the Tidal Basin at Outfall 001. Stormwater discharge that accumulates on the main plaza of the Memorial from rain events drains to an oil/grit separator and then to a three-chamber sedimentation basin where it is combined with any groundwater and pool flushings and before discharging through Outfall 001. Calcium hypochlorite is sometimes added to the pools for algae control.

Lincoln Memorial

The Lincoln Memorial Reflecting Pool (LMRP) is national landmark that is located close to the center of Washington, D.C, in the National Mall area, and is managed by National Mall and Memorial Parks (NAMA), a unit of the National Park Service. LMRP is considered a recreational facility that has been classified as a minor industrial facility for permitting purposes. The facility consists of the Lincoln Memorial Reflecting Pool itself (Pool), a water treatment facility, and walkways.

This will be the first NPDES permit for LMRP; however, LMRP is considered an existing facility since the Environmental Protection Agency (EPA) has approved discharges from LMRP in the past. For the discharges that occurred prior to the effective date of this permit, NAMA consulted with EPA and the District of Columbia Department of Energy & Environment (DOEE), conducted sampling, and submitted a monitoring plan for the discharge prior to discharging.

The pool requires draining for intermittent maintenance and cleaning. Two separate means of draining the pool are provided. A gravity drain discharges to the Tidal Basin via a 32-inch valve located near the southeast end of the Pool. Additionally, the drain pump located within the WTF conveys the water within the pool to a sanitary sewer. Sanitary sewer discharges are used for system backwashes and in the case of an emergency contamination of the pool by a foreign substance. Any large volume draining event will be coordinated with DC Blue Plains. (Lincoln Memorial Application, 2015).

For both discharges, it is expected that all effluent will be mixed to background levels in the tidal basin before water reaches the Potomac River.

II. Description of the Action Areas

World War II Memorial

The action area is defined as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action" (50 CFR Section 402.02). This includes the project's footprint as well as the area beyond it that may experience direct or indirect effects that would not occur but for the action. The World War II Memorial site (latitude 38°53'21", longitude 77°02'24") has a drainage area of approximately 8.5 acres. It has a main plaza area that consists of two pools and their accompanying fountains. The Rainbow Pool is the larger of the two pools and holds approximately 320,000 gallons of water. The smaller Ceremonial Pool holds approximately 50,000 gallons of water and both are operated by a circulating pump housed underground in a concrete enclosed vault. The site also includes statues, decorative plaques, pedestrian walkways, vehicle parking, vehicular maintenance access areas, a comfort station, and an information center.

There is a lower level of the main plaza where the water is collected and conveyed to the outfall. Since the lower level of the main plaza is built a few feet below the groundwater table, an underground low-permeability wall was built to divert and collect groundwater beneath the Memorial to prevent groundwater intrusion.

Figure 1: Outfall location for WWII Memorial

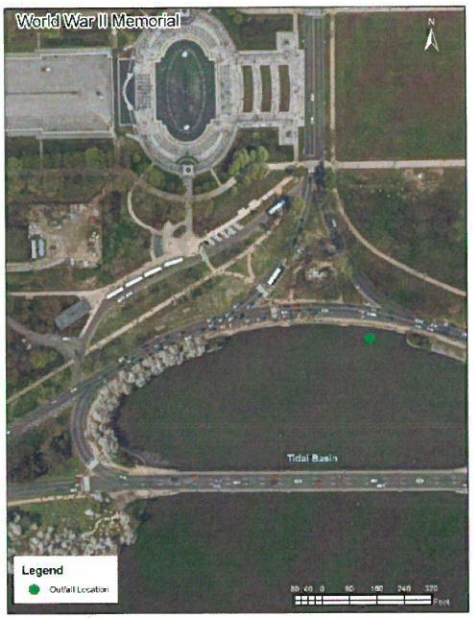

Figure 2: Specific outfall location for WWII Memorial (green dot)

The stormwater, groundwater, and water from pool flushings and backwash is collected underground and eventually discharged to the Tidal Basin through outfall 001 (38°53'15" latitude, 77°02'26" longitude, displayed in Figure 2).

The WWII Memorial discharges to the Tidal Basin. The Basin is about 122 meters wide and has a varied depth of 1-8 meters. With an approximate size of 107 acres at 10 feet deep it would have a volume of approximately 348,637,030 gallons (http://www.lakeandpondsolutions.com/helpful-info/acreage-and-volume-calculations). Based on tidal influence, twice a day, 250 million US gallons from the Potomac River enter the Basin through the inlet gates. When the tide changes, water trying to flow out of the inlet gates causes the gates to close; simultaneously this action causes the outlet gates leading to the Washington Channel to open. This rush of water leaving the basin sweeps away silt or sediment build up inside the channel, keeping it navigable. Fill lands separate the Channel from the Potomac River and water drains to the Anacostia River just above confluence with the Potomac River (https://www.nps.gov/articles/dctidalbasin.htm).

As the Tidal Basin has an average daily flow of 2.5 million gallons and the discharges authorized by this permit will constitute less than 1% of the flow to the tidal basin per year – it is expected that discharges to the tidal basin will be fully diluted before entering the Potomac River. Based on the water used (potable or Tidal Basin water), its intermittent discharge, and the minimal levels of discharge being contributed to the Tidal Basin over the discharge time- mixing to background level is expected to occur prior to entering the Potomac River.

Lincoln Memorial Reflecting Pool

The Pool, which has a surface area of approximately 338,843 square feet, was constructed in 1922 – 1923 and then rehabilitated in 2010-2012. Currently, the Pool holds approximately 4.5 million gallons of water and is filled with potable water from the District of Columbia's (District) potable water supply. The intended source of water to fill the Pool is water from the

Tidal Basin (Basin), which will be treated at filling; however, the use of water from the Basin depends on the conditions of the Basin. Since the Pool has only been filled with potable water since 2012, the permittee will be required to submit an effluent characterization report before discharging if the Pool has been filled with water from the Basin. The permit will contain special conditions regarding the use of water from the Basin, use of potable water, and emergency discharges.

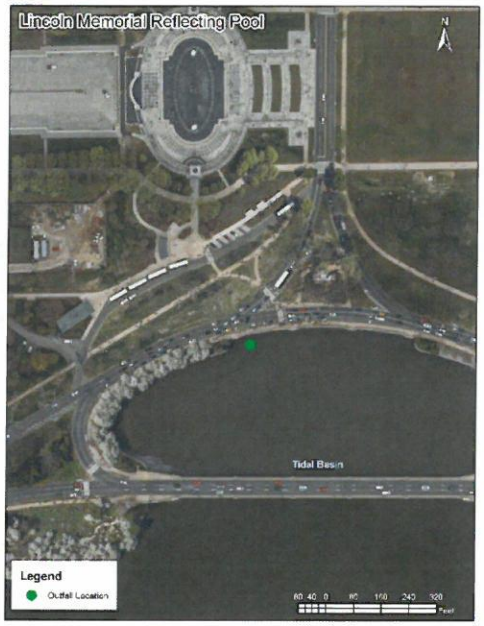

Figure 3: Outfall location for Lincoln Memorial Reflecting Pool

Water is currently supplied to the Pool from the District by a potable water connection and may be supplied to the Pool by the water treatment facility via the raw water pump station. Also, make-up water from the World War II Memorial may be used to add water to the Pool. The water level in the Pool is controlled by an overflow weir. If the water level within the Pool is greater than the overflow weir elevation, water flows by gravity to the Basin. Approximately 1.5 million gallons of water is continually circulated and filtered through the Pool and water treatment facility daily. 1.728 million gallons of water is the maximum amount that can be circulated through the water treatment facility daily. The water treatment facility consists of screening equipment, sand filters, ozone disinfection equipment, flow metering, and supporting systems and is capable of operating in more than one mode; it is able to receive and treat incoming water from a raw water pump station and convey the water to the Pool (fill mode) and it circulates and treats the water of the Pool once the Pool has reached the desired fill level (circulation mode). The water treatment facility also has the capability to pump the water within the Pool to the sanitary sewer and convey treated water from the Basin to the Constitution Gardens Pond (Pond) once installation of the Pond's force main is complete.

The water treatment facility is normally operated in circulation mode to maintain the water quality in the Pool and ensure that the water remains reflective. In this mode of operation, water from the center channel of the Pool flows by gravity to the water treatment facility to start the treatment process. Once a circulation pump is started, the water from the Pool is drawn and

conveyed to the screening stages. The screened water then flows to two sand filters operating in parallel. Ozone is added after sand filtration. The treated water is then supplied to the Pool.

The Pool requires draining for intermittent maintenance and cleaning. There are two means of draining the Pool: (1) a gravity drain discharges to the Tidal Basin, and (2) the drain pump located within the water treatment facility conveys water within the Pool to a sanitary sewer. The permittee submitted an application to cover an annual discharge (draining) of water from the Pool to the Basin. The discharge is expected to occur every year and will occur during the winter months (December, January, and February). The permittee must contact the D.C. Water and Sewer Authority for discharges to the sanitary sewer.

As the Tidal Basin has an average daily flow of 2.5 million gallons and the discharges authorized by this permit will constitute less than 1% of the flow to the tidal basin per year – it is expected that discharges to the tidal basin will be fully diluted before entering the Potomac River. Based on the water used (potable or Tidal Basin water), its intermittent discharge, and the minimal levels of discharge being contributed to the Tidal Basin over the discharge time- mixing to background level is expected to occur prior to entering the Potomac River.

III. NMFS Listed Species (and Critical Habitat) in the Action Area

NMFS has identified the Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) and the Shortnose sturgeon (*Acipenser brevirostrum*) as the federally-listed endangered species in the proposed project area.

Federal Register citations and Species Recovery Plan citations for all listed species that are present in the action area

- Shortnose sturgeon (Acipenser brevirostrum)(32 FR 4001; Recovery plan: NMFS 1998)
- Atlantic sturgeon (Acipenser oxyrinchus oxyrinchus)(77 FR 5880 and 77 FR 5914)

Critical Habitat:

- Atlantic sturgeon (81 FR 35701). Proposed for GOM, New York Bight, and Chesapeake Bay DPSs *
- Atlantic sturgeon (81 FR 36077). *

*While mentioned, it should be noted that critical habitat designation for the Atlantic Sturgeon is not within the action areas of these permits.

Atlantic Sturgeon

The Chesapeake Bay distinct population segment of the Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*), which was federally listed as endangered on February 6, 2012, is one of the endangered species under NMFS's jurisdiction that may occur within the area of the Potomac River where the WWII Memorial and Lincoln Memorial discharge to the Tidal Basin, located adjacent to the river. The Atlantic sturgeon is an anadromous species, which means it only enters freshwater to spawn and spends the rest of its life in estuarine and marine waters. The species spawns in moderately flowing water (46-76 cm/s) in deep parts of large rivers. Eggs are adhesive and will attach to bottom substrate or hard surfaces. Once hatched, juveniles use

benthic structures for refuge and will relocate to estuarine waters for months to years. Subadults and adults live in coastal waters and estuaries nearshore (shallow areas 10-50m depth). It is not uncommon for Atlantic sturgeon to migrate long distances from spawning rivers. Within the mid-Atlantic region, the Atlantic sturgeon is known to spawn in the James River. Juveniles, subadults, adults, and potentially eggs, larvae, and young of year may be present within the Potomac River as spawning, rearing, and foraging all potentially occur. Three small juveniles and a large mature female have been captured in the Potomac River and due to the presence of features necessary to support reproduction and recruitment, the River potentially supports both spawning and rearing. Critical habitat has been designated within the Potomac River. In the vicinity of the Tidal Pool, subadult and adult Atlantic sturgeon may be present opportunistically foraging or migrating. No early life stages are expected in the vicinity of the discharges.

Shortnose Sturgeon

The shortnose sturgeon (*Acipenser brevirostrum*), which has been federally listed as endangered since March 11, 1967, is one of the species under NMFS's jurisdiction that may occur within the area where the WWII Memorial and Lincoln Memorial discharge to the Tidal Basin.

Shortnose sturgeon are known to have been present in the Potomac River historically; twelve have been captured since 1996, the most recent being in 2008. Between 2000 and 2005, USFWS's Atlantic Sturgeon Reward Program documented six individuals at the mouth of the Potomac River, one at the mouth of the St. Mary's River, one at the mouth of the Potomac Creek, and three individuals within the Potomac River (one at rkm 63, rkm 57 and rkm 48 respectively). A tagging and telemetry study depicted the range of shortnose sturgeon to extend from the Little Falls area to the confluence of the Potomac River with the Chesapeake Bay. The study, conducted by the U.S. Geological Survey (USGS) and USFWS, concluded in 2007. This study demonstrated that there was adequate habitat for shortnose sturgeon to forage, winter and spawn in the Potomac River. CART (combined acoustic and radio transmitting) tags were applied to two shortnose sturgeon during the study and one additional shortnose sturgeon in 2008 after the completion of the study. The fish tagged in 2008 has not been detected by telemetry array within the Potomac River; this suggests that the fish either shed the tag, left the Potomac, was caught or died.

Adult shortnose sturgeon have been documented in the Potomac River (Kynard et al. 1997; Kynard et al. 2009) up to the Little Falls Dam. Other life stages are assumed, but currently unknown. Spawning has historically occurred in the Potomac River, but current spawning is only assumed based on the presence of pre-spawning females and suitable habitat. Rearing is expected to occur in the Potomac due to the presence of eggs, which would presumably hatch and allow the larvae to be present downstream in freshwater. Foraging is assumed to occur mainly in the deepwater channel. Juveniles and adult shortnose sturgeon may be in the tidal region of the Potomac River near the tidal basin, opportunistically foraging or migrating. Records for the Anacostia River and Rock Creek further suggest that habitats in these waterbodies and their tributaries are not consistent with the aquatic environment known to support shortnose sturgeon. No early life stages are expected to be present in the vicinity of the discharge.

Critical Habitat

Critical habitat has been designated for the Atlantic sturgeon and was published in the Federal Register on August 17th, 2017 (See 82 Fed. Reg. No. 158, pg. 39160-38274). The actions authorized by this permit do not overlap with critical habitat designations for the Atlantic sturgeon Chesapeake Bay DPS.

The conservation objective of critical habitat designation for the Atlantic sturgeon is to increase the abundance of each DPS by facilitating increased successful reproduction and recruitment to the marine environment (Guidance for Conducting an "NLAA" analysis – Atlantic sturgeon critical habitat, 10/2017).

The physical and biological features that contribute to the successful reproduction and recruitment of Atlantic sturgeon that occur in this area include the presence of a gradual downstream salinity gradient, soft substrate for spawning and juvenile foraging and physiological development, unimpeded movement (this includes appropriate water depths, flow), and appropriate temperature, DO and salinity levels for various sturgeon life stages.

IV. Effects Determination

Water Quality Standards

Water quality criteria are developed by Environmental Protection Agency (EPA) for protection of aquatic life. Both acute (short term exposure) and chronic (long term exposure) water quality criteria are developed by EPA based on toxicity data for plants and animals. Often, both saltwater and freshwater criteria are developed, based on the suite of species likely to occur in the freshwater or saltwater environment. For aquatic life, the national recommended toxics criteria are derived using a methodology published in *Guidelines for Deriving Numeric National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses*. Under these guidelines, criteria are developed from data quantifying the sensitivity of species to toxic compounds in controlled chronic and acute toxicity studies. The final recommended criteria are based on multiple species and toxicity tests. The groups of organisms are selected so that the diversity and sensitivities of a broad range of aquatic life are represented in the criteria values. To develop a valid criterion, toxicity data must be available for at least one species in each of eight families of aquatic organisms. The eight taxa required are as follows: (1) salmonid (e.g., trout, salmon); (2) a fish other than a salmonid (e.g., bass, fathead minnow); (3) chordata (e.g., salamander, frog); (4) planktonic crustacean (e.g., daphnia); (5) benthic crustacean (e.g., crayfish); (6) insect (e.g., stonefly, mayfly); (7) rotifer, annelid (worm), or mollusk (e.g., mussel, snail); and, (8) a second insect or mollusk not already represented. Where toxicity data are available for multiple life stages of the same species (e.g., eggs, juveniles, and adults), the procedure requires that the data from the most sensitive life stage be used for that species.

The result of the above analysis is the calculation of acute (CMC) and chronic (CCC) criteria. CMC is an estimate of the highest concentration of a material in surface water to which an aquatic community can be exposed briefly (i.e., for no more than one hour) without resulting in an unacceptable effect. The CCC is an estimate of the highest concentration of a material in

surface water to which an aquatic community can be exposed indefinitely without resulting in an unacceptable effect. EPA defines "unacceptable acute effects" as effects that are lethal or immobilize an organism during short term exposure to a pollutant and defines "unacceptable chronic effects" as effects that will impair growth, survival, and reproduction of an organism following long term exposure to a pollutant. The CCC and CMC levels are designed to ensure that aquatic species exposed to pollutants in compliance with these levels will not experience any impairment of growth, survival or reproduction.

Very few toxicity tests have been conducted with sturgeon. In the absence of species specific chronic and acute toxicity data, the EPA aquatic life criteria represent the best available scientific information. Absent species specific data, we believe it is reasonable to consider that the CMC and CCC criteria for pollutants are applicable to ESA listed species under our jurisdiction as these criteria are derived from data using the most sensitive species and life stages for which information is available. As explained above, a suite of species is utilized to develop criteria and these species are intended to be representative of the entire ecosystem, including all life stages of shortnose and Atlantic sturgeon as well as their benthic prey. These criteria are designed to not only prevent mortality but to prevent all "unacceptable effects," which, as noted above, are defined by EPA to include not only lethal effects but also effects that impair growth, survival and reproduction. Therefore, discharges in compliance with water quality standards will result in effects to listed species that will be so small they would not be meaningfully detected. As such, effects are insignificant.

World War II Memorial

The pool requires draining for maintenance and cleaning. Usually this is scheduled for early winter prior to a time when the pool remains empty for several months. It can be drained either into the Tidal Basin or to the Lincoln Memorial Reflecting Pool. The Pool is not continuously discharged.

The pool is discharged to the sanitary sewer only in the case of an emergency contamination of the pool by a foreign substance. Any large volume draining event to sanitary sewer will be coordinated with DC Blue Plains. (World War II Memorial Permit Application, 2015).

As the Tidal Basin has an approximated volume of 348,637,030 gallons, discharges from the pool would be about 0.1% of the total volume of the pool (if discharged all at once). As the average daily flow of the Tidal Basin is 2.5 million gallons and the Potomac around DC is 8 billion gallons per day, the intermittent (once per year) short-lived discharges of approximately 370,000 gallons discharged over several days authorized by this permit (0.1% of the total tidal basin volume) will have minimal impacts (if at all) on protected species in the action area. As such, discharges from the pool are expected to be mixed within the Tidal Basin prior to entering the Potomac River and therefore effects will be de minimas they cannot be detected and are therefore insignificant.

Chlorine

No detectable chlorine will be present in waters drained into the Tidal Basin. The water will be tested for the concentration of chlorine and ascorbic acid added to de-chlorinate water so the

chlorine levels are within regulatory limits prior to discharge. Total residual chlorine shall not be greater than the non-detect level of less than 0.1 mg/L and is monitored by grab samples whenever discharges are to occur. Because the discharges have no potentially harmful levels of pollutants in the discharge and are in compliance with D.C. Water Quality Standards, and all effluent is expected to be fully diluted to below background levels when discharged into the Potomac River, any effects to the listed species are extremely unlikely to occur and are therefore discountable.

Iron

Periodic elevated iron concentrations were recorded from the WWII Memorials discharge since 2010. These were due to groundwater infiltration through cracks in the slurry wall around the storm vault. The last permit required the permittee to complete and submit to EPA an iron study which assessed, evaluated and recommended a course of action for addressing the iron levels in the discharge. A site visit was conducted in November of 2015 and the slurry wall was undergoing repairs. As of March 2016, the National Park Service confirmed the repairs to the slurry wall was completed. Figure 4 graphs iron levels in the discharge since 2010. Since 2015 it is evident that fixing the slurry wall decreased the iron concentration in the discharge.

While the most recent DMR data indicate the repair of the slurry wall may have helped in reducing iron levels in the discharge, it is still not yet clear whether the repair will continue to keep groundwater infiltration out. Therefore, a monitoring requirement for iron remains in the permit with the accompanying special condition (mentioned below) until the permittee can maintain iron levels at or below the water quality criterion of 1.0 mg/L.

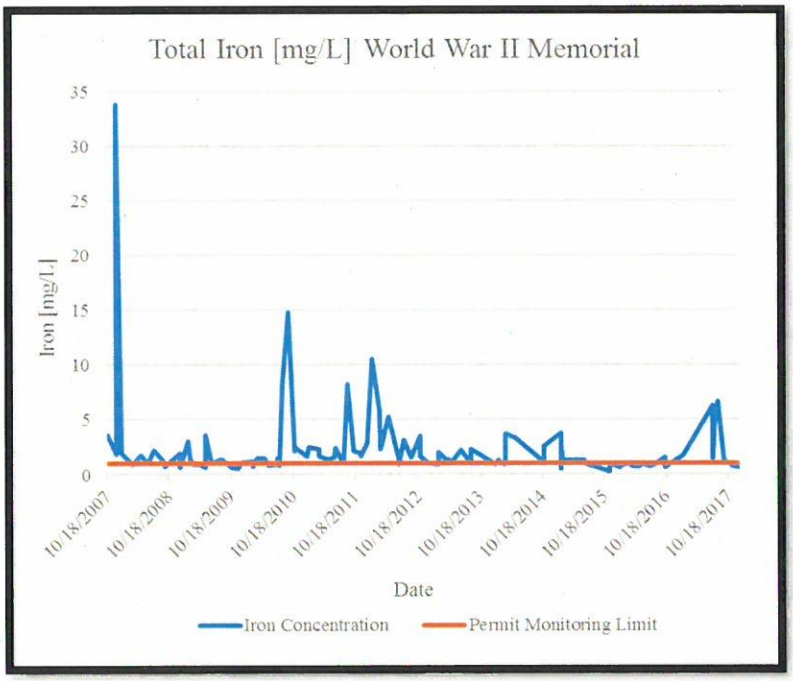

Figure 4: Total Iron concentration discharged from WWII memorial (2007-2017).

The permittee shall report iron concentrations above the benchmark value of 1.0 mg/L to the EPA. Should there be 3 consecutive results above 1.0 mg/L the permittee must submit to EPA a plan of action to reduce the iron concentrations below the water quality criterion of 1.0 mg/L. The plan of action shall be provided within 30 days of the time the permittee becomes aware of the three consecutive exceedances. The written submission shall contain a description of the exceedance and its cause and steps taken or plan to reduce, eliminate, and prevent occurrences of the exceedance. However, these levels of iron are expected to be completely diluted to background levels in the Tidal Basin before entering the Potomac River, at which time they are expected be at or below the effluent limitations set by EPA. As such any effects will be so small they cannot be detected and are therefore insignificant.

pH, E. coli, Polychlorinated Biphenyls (PCBs)

A Total Maximum Daily Load (TMDL) exists for pH, E. coli and PCBs in the Tidal Basin. The TMDL does not assign any wasteload allocations to this facility. The bacteria TMDL was revised in 2013 that included a translation of the bacteria loads from fecal coliform to *E. coli* to be consistent with the District's water quality standard.

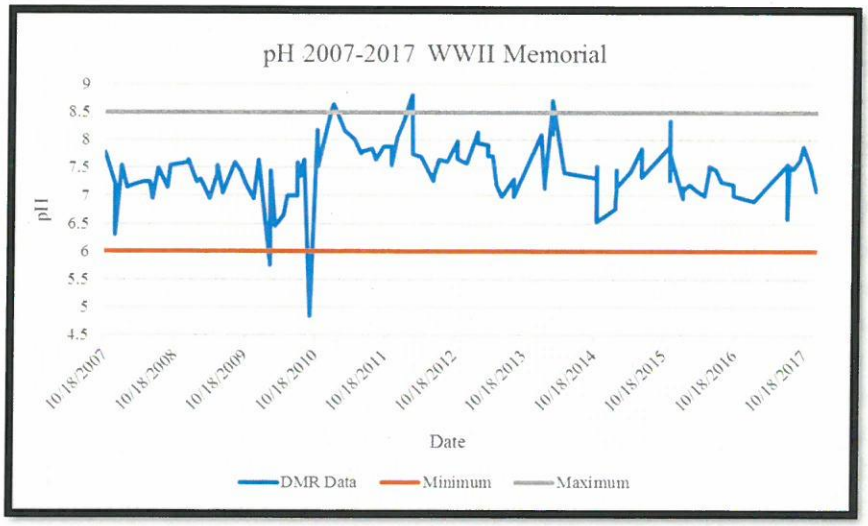

Figure 5: pH data from the WWII memorial from 2007-2017.

Data submitted with the application show that E. coli has a reasonable potential to cause or contribute to an excursion above the DC water quality criterion of 126MPN/100mL. Therefore, a water quality based effluent limit was imposed with a 2-year compliance schedule to allow The National Park Service to be able to meet the limit. Monitoring requirements for pH are included in this permit renewal to maintain consistency with the District's water quality standard as well as with the TMDL to ensure the discharge does not contribute to the existing pH impairment in the Tidal Basin. PCBs are not believed to be present in the discharge. pH has a discharge limit of 6.0-8.5 and should not cause an excursion of pH in the Tidal Basin.

As such, discharges authorized by this permit will constitute less than 1% of the flow to the tidal basin per year – and it is expected that discharges to the tidal basin will be fully diluted before entering the Potomac River, at which time they are expected be at or below the effluent

limitations set by EPA. As such, any effects will be so small they cannot be detected and are therefore insignificant.

Total Nitrogen, Total Phosphorus and Total Suspended Solids

The Chesapeake Bay TMDL categorizes the WWII Memorial as a non-significant industrial discharger and is included in the aggregate wasteload allocations (WLAs) for TN, TP, and TSS. Due to a lack of data from nonsignificant dischargers for TN and TP, the aggregate WLAs were based on default assumptions regarding flow and concentrations. The TMDL states facilities should provide, at a minimum, nitrogen, phosphorus, and/or TSS monitoring data. The TMDL also expects that renewed NPDES permits will require monitoring of TN, TP, and TSS to verify existing loads are consistent with the assumptions of the aggregate WLAs. Therefore, a quarterly monitoring requirement for TN and TP is imposed in the permit to meet the assumptions of the WLA and to inform future TMDL revisions. As such, discharges authorized by this permit will constitute less than 1% of the flow to the tidal basin per year – and it is expected that discharges to the tidal basin will be fully diluted before entering the Potomac River. As such, any effects will be de minimas they cannot be detected and are therefore insignificant.
Shortnose sturgeon are assumed to be at least as tolerant of suspended sediment as other estuarine fish (e.g. striped bass, which did not avoid 954-1920 mg/L to reach spawning sites). Striped bass larvae tolerated 50 mg/L and 100 mg/L suspended sediment concentrations and survival was significantly reduced at 1000 mg/L.

The aggregate WLA for sediment was established based on the TSS effluent limits for each facility included in the aggregate. A monthly average limit of 30 mg/L of TSS must not be exceeded for the WWII memorial's discharge to be consistent with the TMDL. A 30 mg/L effluent limit for TSS was imposed in the permit to meet the aggregate WLA assumptions of the TMDL for sediment. As discharges are expected to occur at a frequency of once per year (if needed), effects to species are considered insignificant. Based on dilution that will occur by the time this discharge enters the Potomac, TSS contributions due to this discharge will be negligible. As discharges are expected to occur once per year (if at all), with a permit limit of 30 mg/L, effects to both sturgeon species are too small to be detected, and insignificant.

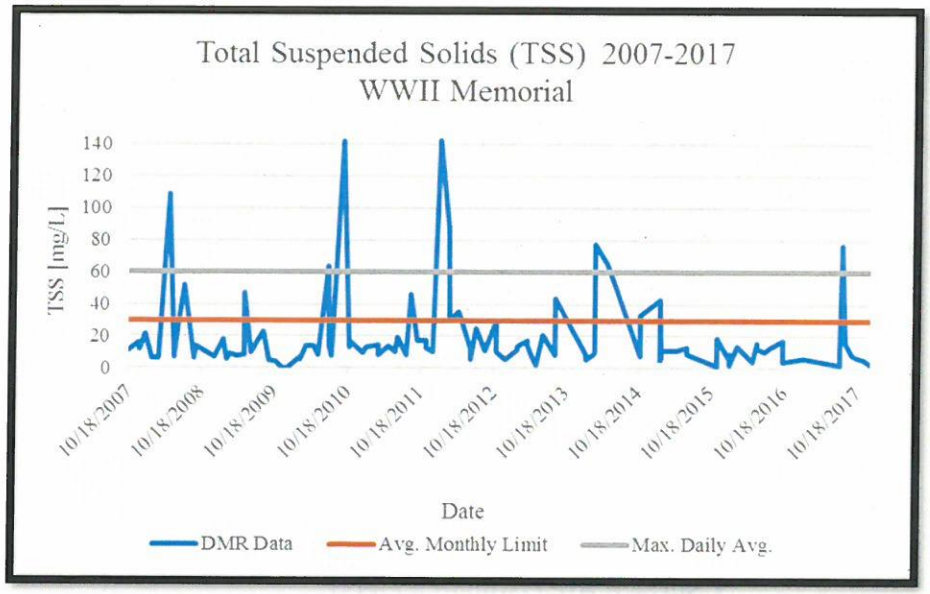

Figure 6: Total Suspended Solids concentrations from the WWII Memorial from 2007-2017.

Lincoln Memorial

For use in the reflecting pool, water is either drawn from the tidal basin initially and if deemed too difficult to obtain or use (based on water quality) potable water is used. That being said, the Lincoln Memorials discharges are generally representative, if not better quality than water in the Tidal Basin that is subsequently discharged to the Washington Ship Channel which runs into the Potomac River (where protected species are located). The entire annual discharge is 4.5 million gallons which is done over 3-4 days (1.5 million gallons/day). This discharge makes up approximately 0.43% of the total volume of the basin if discharged at a rate of 1.5 million gallons per day.

There is no storage of bulk chemicals on site. Chemicals stored on site consist of cleaners and water quality testing chemicals at the water treatment facility. The permittee also anticipates using other chemicals to treat algae blooms that may occur due to environmental conditions or a temporary shutdown of the water treatment facility and in the case that the pH in the Pool is expected to exceed 8.5 at the time of discharge. The permit will contain special conditions for the use of chemicals.

Reasonable Potential Analysis

EPA's *Technical Support Document for Water Quality-based Toxics Control* (TSD) approach (EPA-505-2-90-001, March 1991) was used to determine if the parameters that have a water quality criterion have reasonable potential (RP) to exceed the criterion. Section 1105.7(f) of the District's Water Quality Standards allows for a mixing zone not more than one-third of the width of the receiving waterbody. This was applied to the RP analysis. As required by 40 CFR part 122.44(d), water quality-based effluent limits will be established for the parameters that have reasonable potential to exceed the District's water quality criteria. Monitoring and reporting will be required for parameters that do not have reasonable potential to exceed the District's water

quality if the maximum reported effluent concentration exceeds the respective influent concentration.

Mass-balance Equation: $Q_sC_s + Q_dC_d = Q_rC_r \rightarrow C_r = \frac{Q_sC_s + Q_dC_{d+}}{Q_r}$

where:
Q_s = critical upstream receiving water flow
C_s = critical receiving water background concentration
Q_d = critical effluent flow
C_d = critical effluent concentration
Q_r = critical downstream receiving water flow
C_r = downstream (expected) receiving water concentration

Therefore, Q_s = Tidal Basin flow

Receiving Stream Flow (Tidal Basin)	
Surface Area (square meters)	415,000
Tidal Range (meters per 12 hours)	0.85
Flow (cubic meters per 12 hours)	352,750
Flow (cubic meters per hour)	29,395.83
Flow (gallons per hour)	7,765,556.08
Flow (gallons per minute (gpm))	**129,425.93**
1/3 Flow (gpm)	**43, 142**

C_s = intake concentration of parameter
Q_d = LMRP discharge flow

Reflecting Pool Discharge Flow	
Approximate Amount of Water Discharged to Tidal Basin (gallons per day)	4,000,000
Duration of Discharge (days)	4
Reflecting Pool Discharge Flow (gpm)	**694.44**

C_d = critical effluent concentration

40 CFR 122.44(d)(1)(ii) requires the permitting authority to use procedures which account for the variability of the pollutant or pollutant parameter in the effluent when determining RP. EPA assumes that the maximum observed effluent concentration does not represent the "critical" condition because the limited data set does not account for day-to-day variability in effluent quality. Therefore, EPA will use the TSD approach, which consists of a statistical analysis that assumes effluent data follow a lognormal distribution, to determine the critical effluent concentration (C_d).

To calculate C_d, first we will determine the reasonable potential multiplying factor based on the probability basis and coefficient of variation, and then multiplied the factor times the maximum

observed effluent concentration.

Confidence Level & Probability Basis	95%
Coefficient of Variation	0.6
Reasonable Potential Multiplying Factor	**6.2**

$Q_r = Q_s + Q_d$
C_r = downstream (expected) receiving water concentration

	Copper	Manganese	Nickel	Zinc
Q_s (gpm)	43,141.98	43,141.98	43,141.98	43,141.98
C_s (µg/L)	3	4.9	0.64	19
Q_d (gpm)	694.444	694.444	694.444	694.444
C_d (µg/L)	18.6	30.38	3.968	117.8
Q_r (gpm)	43,836.42	43,836.42	43,836.42	43,836.42
C_r (µg/L)	**3.247**	**5.304**	**0.693**	**20.565**

Parameter	Effluent (Pool) Concentration (µg/L)	Intake (Tidal Basin) Concentration (µg/L)	Monitoring Required (Y/N)
Copper	3.0	1.1	Y
Manganese	4.9	13	N
Nickel	0.64	0.83	N
Zinc	19	17	Y

Parameter	Downstream (Expected) Receiving Water Concentration (µg/L)	Acute Criterion (CMC) (µg/L)	Chronic Criterion (CCC) (µg/L)	WQBEL Required (Y/N)
Copper[1]	3.247	17.2	11.21	N
Manganese[2]	5.304	100	50	N
Nickel[3]	0.693	584.6	64.93	N
Zinc[3]	20.565	146.35	147.55	N

[1] The acute criterion (Criterion Maximum Concentration or CMC) for this metal is dependent on the hardness of the receiving water (i.e., the Basin), which is 130 mg/L.
[2] There is no Criterion Maximum Concentration (CMC) value for manganese in the DC WQS. Therefore, EPA's National Recommended WQC for human health was used (publication year 1993)

pH

pH in the Pool is expected to exceed 8.5 standard units during the discharge event, the permittee may use one of the following methods to lower the pH:

1. Add ascorbic acid incrementally until the pH is less than 8.5 standard units.
2. Add water with a lower pH until the pH is less than 8.5 standard units. If this method generates a volume of water greater than the capacity of the Pool, the permittee must discharge the Pool water to the sanitary sewer system. The permittee must contact the District of Columbia Water and Sewer Authority for all discharges to the sanitary sewer system.

The permittee must monitor and report for total residual chlorine in the Pool after use of ascorbic acid. The intended source of water that will be used to fill the Pool is water from the Basin. The quality of the water it provides to the water treatment facility is very dependent on the conditions in the Basin. Past experience with filling the Pool has shown that there are times when the Pool needs to filled on a schedule but the water quality of the Basin is so poor that the filtration system cannot adequately clean the Basin water. Under these circumstances the contingency is to use potable water to make up the water that cannot be pulled from the Basin, up to 100% of the Pool's volume (Lincoln Memorial Permit Application, 2015).

As the Tidal Basin has an average daily flow of 2.5 million gallons and the Potomac around DC is 8 billion gallons per day, the intermittent (once per year) short-lived discharges of approximately 1.5 million gallons/day for 3-4 days authorized by this permit (0.43% of the total tidal basin volume) will have minimal impacts (if at all) on protected species in the action area and as such, any effects will be so small they cannot be detected and are therefore insignificant.

Intermittent Pool Treatment

The permittee is authorized to use the following EPA-accepted chemicals to treat algae blooms via injection or direct application:

1. Hydrogen peroxide
2. Chlorine
3. Sodium Hypochlorite Solution, 12.5% (EPA Registration Number 35317-20001)
4. G.C. Pro. (EPA Registration Number 70299-15)
5. ZeroTol 2.0 (EPA Registration Number 70299-12)

The permittee must record the amount used for each chemical. The permittee must also monitor and report for total residual chlorine in the Pool after use of any of the chemicals listed above.

In the case of Sodium Hypochlorite usage, the water level in the pool will be dropped at least 3 inches (lower if a rain event is anticipated) prior to the addition of the chemical since the overflow discharges directly into the Basin. Both Green clean products are OMRI approved. These hydrogen peroxide based products, when properly applied, do not harm aquatic plants or

animals. It is listed as for use in natural water bodies (Lincoln Memorial Permit Application, 2015).

As the Tidal Basin has an average daily flow of 2.5 million gallons and the discharges authorized by this permit will constitute less than 1% of the flow to the tidal basin per year – it is expected that discharges to the tidal basin will be fully diluted, and meeting all water quality standards, before entering the Potomac River. As such, any effects will be de minimas they cannot be detected and are therefore insignificant.

Total Suspended Solids

There is no numeric water quality criterion for TSS. Per 40 C.F.R. § 122.44(a), §125.3, and BPJ, a technology-based effluent limit of 60 mg/L for TSS applies to this facility; however, as previously discussed with DOEE, the TSS level in the Pool should not exceed 25 mg/L.

Shortnose sturgeon and Atlantic sturgeon are assumed to be at least as tolerant of suspended sediment as other estuarine fish (e.g. striped bass, which did not avoid 954-1920 mg/L to reach spawning sites). Striped bass larvae tolerated 50 mg/L and 100 mg/L suspended sediment concentrations and survival was significantly reduced at 1000 mg/L. Based on dilution that will occur by the time this discharge enters the Potomac, TSS contributions due to this discharge will be negligible. As discharges are expected to occur once per year, with a permit limit of 25 mg/L, effects to species are too small to be meaningfully detected and therefore considered insignificant.

Effects of the Action - Critical Habitat

Critical habitat has been designated for the Atlantic sturgeon and was published in the Federal Register on August 17th, 2017 (See 82 Fed. Reg. No. 158, pg. 39160-38274). The actions authorized by this permit do not overlap with critical habitat designations for the Atlantic sturgeon Chesapeake Bay DPS. Critical habitat is not designated within the tidal basin, and indirect effects in the Potomac River (where Critical Habitat is designated) are not expected, because complete mixing to background levels will occur before discharges from the Tidal Basin, and no excursions above water quality thresholds should occur. As such, discharges authorized by these permits should not create pathways to effects for designated Critical Habitat in the Potomac River. Therefore, discharges authorized by this permit should not affect critical habitat and are considered to have no effect on critical habitat in the Potomac.

V. Conclusions

Based on the analysis that all effects of the proposed action will be insignificant and/or discountable, we have determined that the issuance of NPDES permits for the Lincoln Memorial and World War II Memorial are not likely to adversely affect any listed species and have no effect on critical habitat under NMFS' jurisdiction. We certify that we have used the best scientific and commercial data available to complete this analysis. We request your concurrence with this determination.

Sincerely,

Brian P. Trulear

Brian P. Trulear, Chief
NPDES Permits Branch (3WP41)
Office of NPDES Permits and Enforcement

Literature Cited

1. Biological Evaluation for DC MS4. U.S. EPA Region 3. 2/8/2018.
2. DMR data for the World War II Memorial
3. Biological Evaluation for Blue Plains. U.S. EPA Region 3. December 2017.
4. Lincoln Memorial Permit Application, National Parks Service, U.S. Department of the Interior. January 2015.
5. World War II Memorial Permit Application, National Parks Service, U.S. Department of the Interior. April 2015.
6. Guidance for Conducting an "NLAA" Analysis – Atlantic sturgeon critical habitat. "Critical Habitat Analysis Framework for Action Agency Projects that are Not Likely to Adversely Affect Atlantic Sturgeon Critical Habitat (i.e. for Informal Consultations)". NOAA. October 2017.